

# Packet Tracer - Designing and Implementing a VLSM Addressing Scheme

## Topology

You will receive one of three possible topologies.

## Addressing Table

Device	Interface	IP Address	Subnet Mask	Default Gateway
	G0/0			N/A
	G0/1			N/A
	S0/0/0			N/A
	G0/0			N/A
	G0/1			N/A
	S0/0/0			N/A
	VLAN 1			
	VLAN 1			
	VLAN 1			
	VLAN 1			
	NIC			
	NIC			
	NIC			
	NIC			

## Objectives

**Part 1: Examine the Network Requirements**

**Part 2: Design the VLSM Addressing Scheme**

**Part 3: Assign IP Addresses to Devices and Verify Connectivity**

## Background

In this activity, you are given a /24 network address to use to design a VLSM addressing scheme. Based on a set of requirements, you will assign subnets and addressing, configure devices and verify connectivity.

## Part 1: Examine the Network Requirements

### Step 1: Determine the number of subnets needed.

You will subnet the network address requirements:

. The network has the following

- \_\_\_\_\_ LAN will require \_\_\_\_\_ host IP addresses
- \_\_\_\_\_ LAN will require \_\_\_\_\_ host IP addresses
- \_\_\_\_\_ LAN will require \_\_\_\_\_ host IP addresses
- \_\_\_\_\_ LAN will require \_\_\_\_\_ host IP addresses

How many subnets are needed in the network topology?

### Step 2: Determine the subnet mask information for each subnet.

- Which subnet mask will accommodate the number of IP addresses required for \_\_\_\_\_ ?  
How many usable host addresses will this subnet support?
- Which subnet mask will accommodate the number of IP addresses required for \_\_\_\_\_ ?  
How many usable host addresses will this subnet support?
- Which subnet mask will accommodate the number of IP addresses required for \_\_\_\_\_ ?  
How many usable host addresses will this subnet support?
- Which subnet mask will accommodate the number of IP addresses required for \_\_\_\_\_ ?  
How many usable host addresses will this subnet support?
- Which subnet mask will accommodate the number of IP addresses required for the connection between \_\_\_\_\_ and \_\_\_\_\_ ?

## Part 2: Design the VLSM Addressing Scheme

### Step 1: Divide the \_\_\_\_\_ network based on the number of hosts per subnet.

- Use the first subnet to accommodate the largest LAN.
- Use the second subnet to accommodate the second largest LAN.
- Use the third subnet to accommodate the third largest LAN.
- Use the fourth subnet to accommodate the fourth largest LAN.
- Use the fifth subnet to accommodate the connection between \_\_\_\_\_ and \_\_\_\_\_.

### Step 2: Document the VLSM subnets.

Complete the **Subnet Table**, listing the subnet descriptions (e.g. \_\_\_\_\_ LAN), number of hosts needed, then network address for the subnet, the first usable host address, and the broadcast address. Repeat until all addresses are listed.

## Subnet Table

Subnet Description	Number of Hosts Needed	Network Address/CIDR	First Usable Host Address	Broadcast Address

### Step 3: Document the addressing scheme.

- Assign the first usable IP addresses to \_\_\_\_\_ for the two LAN links and the WAN link.
- Assign the first usable IP addresses to \_\_\_\_\_ for the two LANs links. Assign the last usable IP address for the WAN link.
- Assign the second usable IP addresses to the switches.
- Assign the last usable IP addresses to the hosts.

## Part 3: Assign IP Addresses to Devices and Verify Connectivity

Most of the IP addressing is already configured on this network. Implement the following steps to complete the addressing configuration.

**Step 1: Configure IP addressing on \_\_\_\_\_ LAN interfaces.**

**Step 2: Configure IP addressing on \_\_\_\_\_, including the default gateway.**

**Step 3: Configure IP addressing on \_\_\_\_\_, including the default gateway.**

**Step 4: Verify connectivity.**

You can only verify connectivity from \_\_\_\_\_, \_\_\_\_\_, and \_\_\_\_\_. However, you should be able to ping every IP address listed in the Addressing Table.

### Suggested Scoring Rubric

Activity Section	Question Location	Possible Points	Earned Points
Part 1: Examine the Network Requirements	Step 1	1	
	Step 2	4	
<b>Part 1 Total</b>		<b>5</b>	
Part 2: Design the VLSM Addressing Scheme			
Complete Subnet Table		25	
Document Addressing		40	
<b>Part 2 Total</b>		<b>65</b>	
<b>Packet Tracer Score</b>		<b>30</b>	
<b>Total Score</b>		<b>100</b>	

ID: